



PREPROGRAM FOUNDATIONS REQUIREMENTS

Preparatory work begins in July, is in addition to required credits, and does not affect GPA.

FIN 510: Introduction to Finance
ACCT 560: Introduction to Accounting

FALL 1 REQUIRED COURSES	SPRING REQUIRED COURSES	FALL 2 REQUIRED COURSES
<p>REQUIRED CREDITS: 13.5</p> <p>DAT 561: Introduction to Python & Data Science <i>3 credits</i> MGT 560F: Professional Business Communication <i>1.5 credits</i></p> <p>Fall A 1.5 credits/course ACCT 503: Business Analysis/Financial Statements DAT 560G: Database Design & SQL FIN 524: Options & Futures FIN 532: Investment Theory</p> <p>Fall B 1.5 credits/course ACCT 503B: Advanced Business Analysis/Financial Statements FIN 524B: Derivative Securities MGT 537: Financial Industry Platform <i>0 credit</i></p>	<p>REQUIRED CREDITS: 9</p> <p>FIN 500Q: Quantitative Risk Management <i>3 credits</i> FIN 528: Investments Praxis <i>3 credits</i></p> <p>Spring A 1.5 credits/course FIN 525: Fixed Income Securities FIN 534: Advanced Corporate Finance I – Valuation</p>	<p>REQUIRED CREDITS: 6</p> <p>Choose one: FIN 560A: Research Methods in Finance <i>3 credits</i> DAT 537: Data Analysis, Forecasting & Risk Analysis <i>3 credits</i></p> <p>Fall A 1.5 credits course FIN 538: Stochastic Foundations for Finance</p> <p>Fall B 1.5 credits course FIN 532B: Data Analysis for Investments</p>
FALL ELECTIVE COURSES	SPRING ELECTIVE COURSES	EXPERIENTIAL LEARNING REQUIREMENT
<p>ELECTIVE CREDITS: 10.5 <i>3 credits/course</i></p> <p>CSE 501N: Introduction to Computer Science DAT 500S: Predictive Analytics for Business Decision-Making</p> <p>Fall A 1.5 credits course FIN 500W: Venture Capital Methods*</p> <p>Fall B 1.5 credits/course OB 561: Negotiation & Conflict Management FIN 527: Financial Markets*</p> <p>FIN 523B: Mergers & Acq. FIN 530: International Finance FIN 500X: Venture Capital Practice FIN 533: Valuing Strategic Corporate Investments FIN 534B: Advanced Corporate Finance II – Financing FIN 550C: Endowments, Foundations & Philanthropy FIN 550E: Behavioral Finance* DAT 560M: Big Data & Cloud Computing*</p>	<p>ELECTIVE CREDITS: 10.5 <i>3 credits/course</i></p> <p>CSE 417T: Introduction to Machine Learning CSE 502N: Data Structures & Algorithms DAT 500W: A/B Testing in Business & Social Science FIN 537: Advanced Derivative Securities <i>(by faculty permission only)</i></p> <p>Spring A 1.5 credits/course FIN 500Y: Private Equity Methods* FIN 534C: Advanced Corp. III – Corporate Financial Strategy FIN 536: Fin. Issues in Leasing FIN 539: Mathematical Fin. <i>(by faculty permission only)</i> FIN 550A: Legal, Compliance & Taxation Aspects of Wealth Management*</p> <p>MGT 511A: Law & Business Management MEC 538: Economics of the Organization MKT 523: Sales Management</p> <p>Spring B 1.5 credits/course FIN 500Z: Private Equity Practice FIN 523B: Mergers & Acq. FIN 549H: Real Estate Fin. FIN 550B: Wealth Management Practice* FIN 550D: Hedge Fund Strategies* FIN 552: Fixed Income Derivatives FIN 555: Risk Mgmt. & Ins. DAT 562: Text Mining</p>	<p>COMPLETE 1 COURSE:</p> <p>FIN 501P: CFAR Practicum <i>3 credits</i> MGT 551E: Internship, Business, & Application <i>1.5 credits</i> MGT 501V: Applied Problem Solving for Orgs <i>1.5 credits</i></p> <p>* Strongly recommended by Academic Director</p>
<p>TOTAL CREDITS: 39 Required: <i>28.5</i> MSFWAM Elective: <i>10.5</i></p>		

Academic Year 2021-2022 The degree requirements in this document apply to students entering Washington University during the 2021–2022 academic year.

Under the flat tuition rate, students may take up to 18 credits per semester. Additional credits must be approved and are charged at the per credit rate. Every effort is made to ensure that the information is accurate and correct as of the date of publication (5/7/21). Washington University reserves the right to make changes at any time without prior notice. Therefore, this curriculum document may change from time to time without notice. The governing document at any given time is the then-current version, as published online.



MSF Wealth & Asset Management Courses

Summer Online Foundation Workshops

FIN 510 Introduction to Finance

The main topics to be covered in this course are (1) principles of investments, (2) financial analysis of corporate projects, (3) cost of capital, and (4) capital structure and financing policies. The objective of the company is assumed to be shareholder value maximization. Shareholder value is created by earning more than the cost of capital. The cost of capital is an opportunity cost – what investors could expect to earn on comparable investments in the financial markets. To understand the cost of capital, we need to understand the viewpoint of investors. Furthermore, to understand whether a project earns more than the cost of capital, we need to know how to estimate and discount project cash flows. So, the first three topics are closely connected. The main question in the fourth topic is whether we can create shareholder value through the financial structure of the firm. For example, we will ask whether we can lower the cost of capital by financing with debt instead of equity, or vice versa.

ACCT 560 Introduction to Accounting

In this course, we will study the three fundamental financial accounting issues, including (1) recognition, (2) measurement/valuation, and (3) classification/disclosure and consider how business transactions are reflected on the financial statements using generally accepted accounting principles (GAAP). We will cover the four primary financial statements (balance sheet, income statement, statement of stockholders' equity, and statement of cash flows), the supporting footnotes to these statements, and several reports (annual reports, proxy statements, and press releases). The course incorporates both a preparer's perspective (i.e., GAAP requirements for recording and presenting financial information) and a user's perspective (i.e., how an investor or analyst can interpret and use financial statement information).

Fall Semester

ACCT 503 Business Analysis Using Financial Statements

In this course we use concepts from financial accounting, finance, and strategy to develop models used by financial analysts in valuing equity securities (although we will focus on equity valuation, our approach is applicable to issues faced by managers considering investment opportunities). We will discuss/review a variety of models, including the dividend model, the free cash flow model, the method of comparables/multiples, and the asset-based valuation model. These more traditional models will be contrasted with the residual income valuation model, a relatively recent valuation innovation. 1.5 credits.

DAT 560G Database Design and SQL

Databases are at the foundation of every organization's information strategy. Understanding the structure of databases and mastering the tools to analyze data are essential skills in any role. The tools developed in this course assist students in implementing a company's data management strategy and developing well-grounded analytical recommendations. In this course we focus on understanding how data is structured in relational databases. With vast amounts of data available, from disparate sources, effective organization of the data is essential to its utilization. To complement this, we utilize SQL (Structured Query Language) as the primary tool to extract data for managerial reports and for advanced analytical models. Practical experience with current relational database software is developed throughout the course. 1.5 credits.

FIN 524 Options & Futures

Focuses on futures with an introduction to options. Discusses forward and futures pricing, and the use of various futures contracts to hedge commodity price risk, interest risk, currency risk, stock portfolio risk, and other risk exposures. 1.5 credits.

FIN 532 Investment Theory

A course in the theory of risk and return in capital markets. Topics covered correspond to those which are covered in the CFA level 1 exam. We will cover the CAPM and APT models of asset pricing and will discuss various measures of mutual fund performance evaluation which arise from these models. We will discuss interest rate determination and also introduce the concepts of price and reinvestment risk in fixed income securities. 1.5 credits.

ACCT 503B Advanced Business Analysis Using Financial Statements

This course builds on ACCT 503. We investigate approaches to forecasting future value drivers of firms and then the preparation of pro forma financial statements based on these forecasts. The concepts will be applied by having students prepare an equity analyst report. The report is the communications of evidence collected from a systematic study of a firm, its environment, and its future prospects to justify a recommendation. Prerequisite: ACCT 503. 1.5 credits.

FIN 524B Derivative Securities

Provides an in-depth analysis of valuation and trading strategies for options and other derivative securities which have applications across areas of finance such as hedging, swaps, convertible claims, mortgage payments, index arbitrage, insurance, capital budgeting and corporate decision making, and are responsible for many new innovations and developments of the financial markets. Prerequisites: FIN 524. 1.5 credits.

MGT 537 Financial Industry Platform

DAT 561 Introduction to Python and Data Science

This course provides students the necessary skill set to extract reliable insights from large datasets prevalent in various business applications, such as supply chain management, marketplace operations, healthcare analytics, and financial engineering, using Python. In this course, students will develop basic tools to understand Python programs and implement data processing pipelines using Python. In particular, students will learn how to acquire, clean, analyze and visualize data in Python, which they will then use to improve decision-making processes. Throughout the course, students will use the Python programming language, which is very effective for data manipulation, reporting, and complex optimization. Topics covered include introduction to Python programming, data acquisition and cleaning, data manipulation, current multi-source data collection technology used in practice, basic data visualization using Matplotlib, ggplot2, and Bokeh. 3 credits.

MGT 560F Professional Business Communication

Communication is the process of sending and receiving messages, however, communication is effective only when the message is understood and when it stimulates action or encourages the receiver to think in a new way. This course will introduce students to fundamental best practices in business writing and business speaking that will ensure effective communication. Students will participate in activities that will develop professional business communication skills in both writing and speaking. These will include: preparing, writing and delivering presentations, composing clear concise business messages in a variety of formats, understanding emotional intelligence to reach the audience and utilizing critical thinking as a basis for communication strategies. 1.5 credits.

Spring Semester

FIN 525 Fixed Income Securities

This course analyzes investment in bonds and related fixed-income instruments. Major topics are bonds, interest rate risk, and derivative securities. Bond topics include interest rate compounding conventions, yield curves, and forward interest rates. Risk analysis covers duration, convexity, and immunization. Derivative securities are analyzed using an option-theoretic approach to valuing interest rate contingent claims. Prerequisites: FIN 524 and FIN 524B. 1.5 credits.

FIN 534 Advanced Corporate Finance I – Valuation

This course considers a broad range of issues faced by corporate financial managers with respect to

the valuation of projects, divisions, and entire companies. The prime focus will be on assessing the profitability of different business alternatives in a forward-looking sense. It will explicitly consider the impact of financing decisions on the valuation of business alternatives. Other topics covered include an examination of EVA as both a valuation and performance measurement tool, and a brief introduction to Real Options as an alternative to discounted cash flow analysis. The course is designed to be "hands-on," and will heavily focus on direct applications of the theory and the individual development of spreadsheet modeling skills. Students who successfully complete the course should possess a set of cutting-edge valuation skills. 1.5 credits.

FIN 500Q Quantitative Risk Management

Risk management is an increasingly important, but often misunderstood, aspect of corporate financial policy. This course is designed to provide solid theoretical and technical foundations for financial risk management with applications to a variety of different industries and firms. Measures of risk, regulatory requirements for risk control, and risk management strategies employing derivative securities against market and credit risks will be analyzed. In addition, risk management methods and tools that are commonly used in practice will be introduced. Prerequisites: FIN 524, FIN 524B. 3 credits.

FIN 528 Investments Praxis

In this course students serve as managers of a portfolio, the Investment Praxis Fund, which is owned by the school. Students will analyze investment opportunities in various industries and present recommendations to the class for possible purchases or sales of securities. Students must demonstrate that their investment decisions are consistent with the style and objectives of the fund. Valuation tools and financial statement analysis are emphasized as part of a thorough analysis. The course will emphasize contact with investment professionals such as portfolio managers, securities traders, consultants, custodians, and plan sponsors. At the end of the semester the students will report on their performance to the advisory board of the fund which is composed of University financial officers and outside investment professionals. 3 credits.

Required Experiential Course

MGT 501 Management Center Practicum

Students work in four-person teams on consulting projects, applying insights from their course work to real-world business problems under faculty supervision. Each student is expected to spend about 150 hours on the project. Grades are based on the quality of the final written and oral reports, as determined by the faculty supervisor. Students are paid a small gratuity, the amount, depending on the quality of the work. 3 credits.

FIN 538 Stochastic Foundations for Finance

This is a foundations course, which is designed as a prerequisite to FIN 539, Mathematical Finance. It is therefore mainly designed for students in the Masters in Finance program who aim at quantitative positions in investment banks, hedge funds and consulting firms. While financial examples will be given, the primary focus will be on stochastic process and stochastic calculus theory. Students interested in applications of the theory are expected to take follow-on courses. Topics to be covered include: general probability theory; Brownian motion and diffusion processes; martingales; stochastic calculus including Ito's lemma; and jump processes. 1.5 credits.

FIN 532B Data Analysis for Investments

The objective of this course is to obtain an in-depth understanding of some of the major empirical issues in investments. Based on recent research articles and cases, students are required to learn the facts, theories and the associated statistical tools to analyze financial data. The topics for this course include models of stock returns, Bayesian and shrinkage estimations for expected returns and covariances, multifactor asset pricing models, GARCH models, principal components, asset allocation, stock screening, predictability, performance evaluation, anomalies, limits to arbitrage and

behavioral finance. Prerequisite: FIN 532. 1.5 credits.

FIN 560A Research Methods in Finance

The course is designed to prepare students for independent research in finance by exploring methods and techniques in a manner that will allow the students to implement them correctly and efficiently. The curriculum will emphasize practical applications of empirical methods used in financial research and how to implement them. Students in the course will learn empirical methods in corporate finance and asset pricing; obtain basic knowledge and familiarity of the databases used in common finance research; get exposure to recent research in finance which applies the methods covered; and learn how to implement the methods covered using relevant programming languages. 3 credits.

DAT 537 Data Analysis, Forecasting and Risk Analysis

This course presents a modern and contemporary coverage of several econometric models that are used for the analysis and forecasting of business data. The basic building blocks for the analysis are regression time series models. Broad coverage of non-seasonal and seasonal ARIMA models is included. The important family of ARCH-GARCH models, used to represent changing volatility, are also covered in detail. These models are widely used in option pricing and in other financial applications. The course includes some extensions of these models to multivariable problems. Students are exposed to numerous real data sets in class and in assignments. All the models are analyzed with a popular econometrics software package that is employed in business. A group project is required. 3 credits.

Electives

DAT 560M Big Data and Cloud Computing

The growth in available data is a challenge to many companies. This presents an opportunity for companies to conquer the vast and various data available to them. The growth in data includes traditional structured data, as well as unstructured data created by both people and machines. It is essential for analysts to be comfortable in the new technologies and tools that are being developed to store, retrieve, analyze, and report, using the vast data resources available. This course introduces students to the technologies currently deployed to overcome the challenges of Big Data. Prerequisite: DAT 560G. 1.5 credits.

FIN 500W Venture Capital Methods

This course provides basic terminology and tools used in evaluation of early-stage venture investing. The course will also cover the history of venture capital and discuss the different strategies that a venture capital firm could utilize. The course will use case studies and outside speakers to provide overviews of certain aspects of the venture capital industry including investment strategies and VC firm operations. 1.5 credits.

FIN 500X Venture Capital Practice

This course is the capstone for students interested in early stage investing. The course objective is to develop practical skills for angel and early-stage investing in private companies. Students will partner with professional investors in the St. Louis community to perform various activities, including finding deals, performing evaluations of investment opportunities, and where appropriate negotiating, arranging financing, and closing investments. The course also relies on bringing in investment professionals from the local community to provide real-world perspective on early stage investing. Prerequisite: Venture Capital Methods and instructor approval. 1.5 credits.

FIN 523B Mergers & Acquisitions

The course will provide an in depth view of the theory and empirical regularities of various corporate control transactions. Specifically, we will discuss valuation of target firms, possible sources of value creation, various motives for mergers, tax consequences of mergers, legal issues in mergers, financing an acquisition, defensive tactics in hostile takeovers, going-private transactions and bidding behavior of acquirers. The method of instruction is a mix of lecture and case analysis. Prerequisite: FIN 534. 1.5 credits.

FIN 527 Financial Markets

This course will facilitate further learning in the finance track by providing insights into various financial markets, financial institutions, associated market participants, select representative transactions and industry conventions. Students will examine the role of regulators, rating agencies, commercial and investment banks, and investors in the debt, equity and derivatives markets. In addition, in the context of the Financial Crisis, the role of regulation, monetary policy, leverage and human behavior will be discussed as possible root causes of the crisis with an emphasis on the various market failures in specific markets and their impact on market participants. Lastly, the role of revised regulations and the future of financial innovation will be debated. 1.5 credits.

FIN 530 International Finance

Measuring and hedging exposures to exchange rate fluctuations is a central topic of this course. The relationships among spot and forward exchange rates, interest rates, and inflation rates are described. Additional topics include capital budgeting for international projects, international capital markets, and international portfolio diversification. 1.5 credits.

FIN 532B Data Analysis for Investments

The objective of this course is to obtain an in-depth understanding of some of the major empirical issues in investments. Based on recent research articles and cases, students are required to learn the facts, theories and the associated statistical tools to analyze financial data. The topics for this course include models of stock returns, Bayesian and shrinkage estimations for expected returns and covariances, multifactor asset pricing models, GARCH models, principal components, asset allocation, stock screening, predictability, performance evaluation, anomalies, limits to arbitrage and behavioral finance. Prerequisite: FIN 532. 1.5 credits.

FIN 533 Valuing Strategic Corporate Investments

The objective is to obtain both an in-depth understanding of the real option theory and the associated implementation skills in real-world applications. The theoretical tools are binomial models and Monte Carlo simulations. The application topics cover all types of typical real options, cases of leasing, R&D, take-over, market expansion, growth values, dot-coms, staged investments, multiple project uncertainties, ranging from standard European and American options to compound and rainbow options. 1.5 credits.

FIN 534B Advanced Corporate Finance II – Financing

This course considers a broad range of issues faced by corporate financial managers with respect to the financing of investment opportunities. In this course, we turn to the right-hand side of the balance sheet as a direct follow up to the skills acquired in the Advanced Corporate Finance I - Valuation, a course that focused on the left-hand side of the balance sheet. The course is designed to be “hands-on”, and we will heavily focus on direct applications of the theory of financing to business practice. To that end, we will cover topics related to the valuation of bond and convertible securities, estimating the costs of financial distress, the reorganization of firms in financial distress, deriving an optimal capital structure, and the effects of management stock option grants on valuation. Prerequisite: FIN 534. 1.5 credits.

FIN 550C Endowments, Foundations & Philanthropy

The course will cover topics in endowment and foundation governance, grant making and investment management as well as fundamentals of philanthropic giving at both the foundation and personal levels. Topics covered include investment policy statements, spending policies, portfolio construction, giving priorities, socially- responsible / environmental-social-governance investing, impact investing, program related investments, and tax considerations. 1.5 credits.

FIN 550E Behavioral Finance

The course will cover topics in behavioral finance, which is a field of finance applying psychology to decisions of investors and corporate managers. Topics covered include prospect theory and non-expected utility preferences, behavioral biases and heuristics, limits to arbitrage, anomalies and their

behavioral explanations, bubbles and their behavioral explanations, behavioral biases of individual vs. professional traders, and behavioral corporate finance. The course will cover theoretical aspects, empirical and experimental evidence, as well as practical implications. Prerequisite: FIN 532 or instructor's approval. 1.5 credits.

FIN 553 Corporate Finance & Investments Industry Seminar

This course is designed to expose SMP and MBA students to the language, issues, and skill sets necessary for careers in corporate finance, investment banking, private equity and asset management. The primary intent of this course is to offer a detailed introduction to financial markets, as well as those people, companies and other institutions that participate in it as providers of capital, users of capital or the players that work to intermediate between these two. 0.5 credits.

FIN 557E Introduction to Blockchain & Cryptocurrencies

Blockchain is a revolutionary technology incorporating aspects of data science, economics, computer science, and law. The course allows students to obtain basic understanding of the blockchain technology and its applications to cryptocurrencies, smart contracts, and decentralized finance. 1.5 credits.

OB 561 Negotiation & Conflict Management

Managers spend the majority of their time negotiating--from negotiating schedules and vacation time to negotiating resource allocations to negotiating mergers and major policy decisions and their implementation. Skillful negotiation is a critical component of the tool box of the successful manager. The purpose of this course is to improve students' abilities to diagnose conflict situations, to analyze, plan, and conduct negotiations. The course material addresses negotiation as an effective means for implementing decisions and strategies and resolving conflict in a variety of settings. Course format will involve simulated negotiation and experiential exercises, cases, discussion, and lecture. Students will be evaluated on the basis of case analysis, negotiating performance, a final project and participation. Students are expected to participate in all negotiation exercises. 1.5 credits.

CSE 501N Introduction to Computer Science

An introduction to software concepts and implementation, emphasizing problem solving through abstraction and decomposition. Introduces processes and algorithms, procedural abstraction, data abstraction, encapsulation, and object-oriented programming. Recursion, iteration, and simple data structures are covered. Concepts and skills are mastered through programming projects, many of which employ graphics to enhance conceptual understanding. Java, an object-oriented programming language, is the vehicle of exploration. Active-learning sessions are conducted in a studio setting in which students interact with each other and the professor to solve problems collaboratively. Prerequisites: Comfort with algebra and geometry at the high school level is assumed. Patience, good planning, and organization will promote success. This course assumes no prior experience with programming. 3 credits.

DAT 500W A/B Testing in Business and Social Science

This course introduces students to causal methods that are used to measure the impact of business and policy decisions. The key insight of the course is that correlation does not imply causation and therefore cannot measure impact. In this class, we will learn about A/B testing and other causal methods, as well as how to implement them in business, economic, and policy situations. 3 credits.

DAT 562 Text Mining

Consumers and companies constantly generate large amounts of unstructured or lightly structured texts on the web and offline: exchanges of consumer opinions on products and services on social media, transcripts of phone conversations with customer representatives, open-ended surveys, etc. By employing text analytics, businesses can derive at scale valuable insights into consumer attitudes to brands, competitive landscape, and customer relationships, among other applications. This course introduces students to the methods of mining, organizing, summarizing, and analyzing textual data with the objective of driving business decision-making. 1.5 credits.

FIN 500Y Private Equity Methods

This course will provide the student with an understanding of the basic terminology, due diligence and analytical methodologies critical to evaluating Private Equity investments. The course will also cover the history of Private Equity and the different roles of Private Equity – growth capital, LBO / MBO, Roll-Up, etc. in the evolution of the firm. Private Equity funds in the context of the overall market (strategic vs. financial acquirers) will be discussed as will be the role of leveraged lending and bank financing of financial sponsors. Private Equity as an investment and its role in portfolio construction will be analyzed. Finally, the legal structure of Private Equity funds in the context of firm control and governance will be reviewed. 1.5 credits.

FIN 500Z Private Equity Practice

This course is the capstone for students interested in pursuing careers in private equity. Students will develop practical skills for investing in private companies. Students will partner with professionals in the St. Louis community to perform various activities, including transaction sourcing, evaluating investment opportunities and, where appropriate, negotiating, arranging financing, and closing investments. The course also heavily relies on bringing in professionals from the local community to provide real-world perspectives on private equity investing. Prerequisite: FIN 500Y. 1.5 credits.

FIN 523B Mergers & Acquisitions

The course will provide an in depth view of the theory and empirical regularities of various corporate control transactions. Specifically, we will discuss valuation of target firms, possible sources of value creation, various motives for mergers, tax consequences of mergers, legal issues in mergers, financing an acquisition, defensive tactics in hostile takeovers, going-private transactions and bidding behavior of acquirers. The method of instruction is a mix of lecture and case analysis. Prerequisite: FIN 534. 1.5 credits.

FIN 534C Advanced Corporate Finance III – Corporate Financial Strategy

This course addresses advanced valuation topics, and applies both theory and practical valuation methods to value real world companies-instead of case studies. You will be valuing foreign and U.S. companies in various industries such as banking, industrials, mining, and information technology. This course assumes that you have basic valuation knowledge and exposes you to the complexities involved in performing real-world valuations, and the myriad of issues that practitioners must address. Prerequisite: FIN 534. 1.5 credits.

FIN 536/ACCT 507 Financial Issues in Leasing

This course is devoted to studying the various elements that are involved in identifying leasing opportunities and structuring a lease. Topics covered include accounting and tax issues related to leases, the legal and financial structure of a lease, options embedded in lease agreements, and the marketing and negotiation of leases. 1.5 credits.

FIN 537 Advanced Derivative Securities

This course focuses on implementation of models for pricing and hedging derivative securities in the equity, currency, and fixed-income markets. Students will learn to write programs in a programming environment such as MATLAB to implement the Black-Scholes model, binomial models, Monte-Carlo methods and finite-difference methods. The derivatives studied will include exotic equity and currency derivatives and caps, floors and swaptions. The goals of the course are to learn more about the various instruments that are traded, the various assumptions and methods that may be chosen in modeling them, and the importance of the assumptions in determining the prices and hedges that are chosen. The course will be especially useful to students pursuing careers in sales and trading who will interact with research departments and students pursuing careers in asset management. Prerequisites: FIN 524, FIN 524B. 3 credits.

FIN 539 Mathematical Finance

This course focuses on continuous-time derivative pricing and optimal security trading. In the first half of the course, students will learn how to derive partial differential equations and pricing formulas for various derivative securities including options with stochastic volatility, options with jump diffusion, and

American style options. In the second half of the course, students will learn how to solve optimal portfolio selection problem with or without portfolio constraints through both the Hamilton-Jacob-Bellman equation approach and the martingale approach. The course is mainly designed for students in the Masters in Finance program who aim at quantitative positions in investment banks, hedge funds and consulting firms. The course might also be of interest to those who want a more theoretical approach to analyze embedded derivatives and risk management issues at corporations.

Prerequisites: FIN 524, FIN 538. 1.5 credits.

FIN 549H Real Estate Finance

This course provides a broad introduction to real estate finance and investments. Topics include both equity and debt. We begin with an overview of real estate markets in the United States. On the equity side students will be introduced to the fundamentals of real estate financial analysis, including pro forma analysis and cash flow models, and elements of mortgage financing and taxation. Ownership structures, including individual, corporate, partnerships and REITS will also be covered. On the debt side, we examine a number of financing tools in the context of the evolution of the secondary mortgage market, both residential and commercial. Additional topics related to real estate finance are covered in Fixed Income Securities (FIN 525). 1.5 credits.

FIN 550A Legal, Compliance & Taxation Aspects of Wealth Management

The course will cover topics in law, compliance, risk management and taxation in wealth management at both the firm and client level. Topics covered include firm regulation; advisor compliance, licensing and education; firm risk management; ethics; and taxation of client assets as relates to wealth planning and related firm services required. At the conclusion of this course students will understand the major management issues involved in running a wealth management firm, the obligations of an advisor and the major non-investment considerations for clients of wealth management firms. 1.5 credits.

FIN 550B Wealth Management – Practice

The course will help students to apply the many holistic concepts of Wealth Management by reviewing topics covered in previous courses, and emphasizing the importance of synthesizing, communicating and executing the various planning strategies used to meet the individual needs of clients. Students will be split into small groups; each group will receive a distinct client case study in the first class, and each group will develop a wealth management plan over the course of the semester to be presented to a hypothetical client in the last class. Every class will review planning topics including investment concepts, estate planning, tax management, insurance planning, retirement funding and education funding with a focus on practical application that will inform the recommendations in the wealth management plans. 1.5 credits.

FIN 550D Hedge Fund Strategies

This course provides both an overview of hedge funds and an in-depth analysis of their trading strategies. Topics covered include structure, incentives, and performance evaluation of hedge funds, regulatory and taxation aspects of hedge funds, common trading strategies of hedge funds (e.g., market neutral, global macro, forex, activism, and event driven), and the academic evidence on the performance and influence of hedge funds. Prerequisite: FIN 532 or instructor's approval. 1.5 credits.

FIN 552 Fixed Income Derivatives

This is an advanced course in fixed-income, focusing on risk neutral model-based pricing of fixed-income securities. We will cover both analytic and Monte-Carlo pricing of various types of fixed-income derivatives including caps/floors and swaptions in the context of key "factor models" of the swap term structure and LIBOR Market Model (LMM). Students will apply the theory in a practical group project by calibrating Bloomberg data to interest rate models. In addition, an introduction to the Local Volatility and Stochastic Volatility LMM (SABR) models and basic frameworks of structural and reduced form credit-risk models will be given. We will briefly consider how to use these models to price various types of exotic interest rate derivatives and credit-risky bonds and credit-default swaps commonly seen in practice. Practitioner-focused real-life applications and recent market developments (OIS, CVA) will also

be discussed. Prerequisites: FIN 525, FIN537 and completion or concurrent enrollment in FIN 539. 1.5 credits.

FIN 555 Risk Management & Insurance

This course will provide an introduction to risk management and insurance. We will explore enterprise risk management broadly and understand what risk is, and how risk can be managed and or mitigated. We will understand the different kinds of risk and the difference between insurance and hedging. We will study the various insurance markets and the basics of how they operate. We will especially focus on the issues of risk management and insurance from an insurance issuer's perspective and from a corporate risk manager's perspective. We will also review the insurance operations of Berkshire Hathaway to understand the operations of a diversified insurance company and of Allstate Corporation and State Farm Insurance as we review the basics of auto and homeowners insurance respectively. 1.5 credits.

MGT 511A Law & Business Management

We will review different rules of substantive law which affect the conduct of individuals and businesses. We will analyze different legal theories and rules of substantive law which regulate the conduct of individuals and businesses and which impose liability for damages on individuals and business entities when those rules are violated. We will survey basic rules of criminal law, intentional torts, and negligence. We will next focus on the rules affecting the making and performance of contracts, and the liability which results from breach of contractual relationships. This will include general contract law, as well as specific rules that exist in the sale of goods and merchandise, and in the purchase, ownership and sale of real property. In addition, we will also analyze and compare the choices available for dispute resolution, including mediation, arbitration, and trial in court. 1.5 credits.

MEC 538 Economics of the Organization

Business organizations are complex systems with mutually dependent parts. Understanding the economic factors that influence how the organizational pieces function together can be a daunting task. The goal of this course is to provide an economic framework for the analysis of a variety of challenges that face businesses, both at the organizational and individual employee levels. In this course we will consider what economics can say about the efficient organization of firms and businesses, and provides an economic approach to solving organizational and incentive problems. The aim of this mini is to describing general organizational issues facing firms, such as incentive problems arising from adverse selection, moral hazard, and agency. We consider alternative solutions to these problems and then apply these lessons to readings and cases. 1.5 credits.

MKT 523 Sales Management

Sales management refers to all activities, processes, and decisions involved in managing the sales function in an organization. Effective and efficient sales management is an indispensable component of a marketing strategy especially in business-to-business markets. Companies make significant investments in their sales force as it is the public face of the company, plays a major role in sales creation, and is entrusted with the most important corporate asset - the customer. Primarily through case discussion and industry expert sessions, this course will focus on developing a repertoire of analytic and conceptual skills and emphasize a decision orientation. Topics covered will include sizing, structuring, designing sales territories, recruiting, motivating, compensating and performance management of a professional sales force. There are no prerequisites. 1.5 credits.

CSE 417T Introduction to Machine Learning

The field of machine learning is concerned with the question of how to construct computer programs that automatically improve with experience. This course is a broad introduction to machine learning, covering the foundations of supervised learning and important supervised learning algorithms. Topics to be covered are the theory of generalization (including VC-dimension, the bias-variance tradeoff, validation, and regularization) and linear and non-linear learning models (including linear and logistic regression, decision trees, ensemble methods, neural networks, nearest-neighbor methods, and support vector machines). Prerequisites: CSE 502N, ESE 326 (or Math 3200), Math 233, and Math 309 (can be taken concurrently). 3 credits.

CSE 502N Data Structures & Algorithms

Study of fundamental algorithms, data structures, and their effective use in a variety of applications. Emphasizes importance of data structure choice and implementation for obtaining the most efficient algorithm for solving a given problem. A key component of this course is worst-case asymptotic analysis, which provides a quick and simple method for determining the scalability and effectiveness of an algor